

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re Application of:)	PATENT APPLICATION
)	
Inventor: Leonard Felix, Andrew Ferlitsch))	
and Carl Straub)	
)	
Serial No.: 10/763,700)	Attorney Docket No.
)	SLA1478
Filed: January 23, 2004)	Examiner: McLean, Neil R.
)	Art Unit: 2625
Title: SYSTEM AND METHOD FOR)	Conf. No.: 7663
DE-SPOOLER JOB JOINING)	Customer No.: 55,286
)	

Board of Patent Appeals and Interferences
United States Patent and Trademark Office
P.O. Box 1450
Alexandria, VA 22313-1450

BRIEF ON APPEAL

This is an appeal from the rejection by Examiner Neil R. McLean, Group Art Unit 2625, of claims 1-27 as set forth in the CLAIMS APPENDIX.

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REAL PARTY IN INTEREST

The real party in interest is Sharp Laboratories of America, Inc., as assignee of the parent application in the United States Patent Office, with a recordation date of January 23, 2004 at Reel 014929, Frame 0751.

RELATED APPEALS AND INTERFERENCES

None.

STATUS OF THE CLAIMS

Claims 1-27 are in the application.

Claims 1-27 are rejected.

Claims 1-27 are appealed.

STATUS OF AMENDMENTS

Amendments to the claims were presented in a paper received at the PTO on December 10, 2008. These claim amendments have been entered.

SUMMARY OF CLAIMED SUBJECT MATTER

Conventional multifunctional peripheral (MFP) printing devices are not efficient when printing a continuous stream of low page-count print jobs (specification: page 1, ln. 9-18, see Fig. 1). There is an inherent delay in serially sending print jobs one at a time, from a host-side spooler (e.g., a PC), only after receiving an acknowledgment that the previous job has been completed. This so-called “inter-RIP” (inter-rasterization) delay is a limitation associated with Microsoft operating systems (page 1, ln 20 to page 2, ln. 10). One solution has been to pack multiple jobs into a storage device, so that they can be pipelined. However, a large capacity storage device is costly. Further, even pipelines jobs have the above-mentioned inter-RIP problem. Another solution is to send a premature RIP completion notification to the host, “faking” the host into sending the next print job early. This solution also requires extra memory and does not eliminate inter-RIP delay (page 7, ln. 26 to page 8, ln. 9, see Fig. 3). Another solution is to manually join a plurality of print jobs into a single job. However, this solution requires human involvement and there is no analysis performed to determine if the extra work involved in job-joining is offset by the advantages (page 8, ln. 10 to page 9, ln. 13, see Fig. 4). The claimed invention solves these problems by merging a plurality of print jobs into a single job to avoid inter-RIP delay. Prior to merging the print jobs, however, the claimed invention performs a “merger performance analysis”, and only merges the jobs if it is economical to do so.

Claim 14 recites a system for merging print jobs being sent to a single imaging device (specification: page 9, ln. 14 to page 10, ln. 10, page 12, ln. 17-20). The system 500, see Fig. 5, comprises a merger unit

502 to receive a plurality of despoiled print jobs on line 504 (page 9, ln. 16-17). A print job is explicitly defined as an electronically formatted document in a print data language (page 18., ln. 24 to page 19, ln. 4). The merger unit 502 performs a merger performance analysis to determine if the economy of joining the plurality of jobs exceeds the job joining overhead (page 12, ln. 17-20). In response to determining that the plurality of print jobs can be economically joined, the plurality of print jobs are joined into a single joined print job that is supplied at an interface on line 508 for rendering at a single imaging device 507 (page 9, ln. 17-18). A print controlled 508 embedded in the single imaging device 507 has an interface on line 506 to accept the joined print job and an interface on line 510 to supply a document rendered as a single continuous print job (page 9, ln. 18-21).

Claim 1 recites a method for merging print jobs being sent to a single imaging device (page 19, ln. 26 to page 20, ln. 6, and page 12, ln. 17-20). The method starts with Step 1300 of Fig. 13. At a client device, Step 1302 despoils a plurality of print jobs (page 19, ln 25). A print job is defined as an electronically formatted document in a print job language (page 18, ln. 24 to page 19, ln. 4). Next, the method performs a merger performance analysis, and determines that the economy of joining the plurality of print jobs exceeds the job joining overhead (page 12, ln. 17-20, not shown in Fig. 13). In response to determining that the plurality of print jobs can be economically joined, Step 1304 joins the plurality of print jobs into a single print job for rendering at the single imaging device (page 19, ln. 26). Step 1306 renders the joined print job as a single continuous print job (page 20, ln. 1).

GROUND OF REJECTION TO BE REVIEWED ON APPEAL

1. Whether claims 1, 3-14, and 16-27 are unpatentable under 35 U.S.C. 103(a) with respect to Nishikawa et al. ("Nishikawa"; US 6,934,046) in view of Freedman (US 4,839,829).

2. Whether claims 2 and 15 are unpatentable under 35 U.S.C. 103(a) with respect to Nishikawa and Freedman in view of Reilly (US 6,052,147).

ARGUMENT

1. The rejection of claims 1, 3-14, and 16-27 under 35 U.S.C. 103(a) as unpatentable with respect to Nishikawa et al. ("Nishikawa"; US 6,934,046) in view of Freedman (US 4,839,829).

CLAIMS 1 and 14

In Section 6 of the Final Office Action claims 1, 3-14, and 16-27 have been rejected under 35 U.S.C. 103(a) as unpatentable with respect to Nishikawa et al. ("Nishikawa"; US 6,934,046) in view of Freedman (US 4,839,829). With respect to claims 1 and 14, the Office Action acknowledges that Nishikawa fails to disclose merger performance analysis, or determining if the joining of print jobs exceeds the job joining overhead. The Office Action states that Freedman discloses the performance of a merger analysis to determine the economy of job joining, and that it would have been obvious to include a means for performance analysis that takes into account economic considerations prior to assigning a print job, with the motivation for doing so being based on removing impediments incurred in the routine business practices of the printing industry.

Nishikawa discloses a conventional printing process in Fig. 2, where a host application 201 sends a document to a graphic engine 202 which converts a GDI function to a DDI function. The print driver 203 converts the DDI function to a page description language (PDL), where it is spooled in spooler system 204 before being sent to the printer 1500 (col.

7, ln. 22-36). Nishikawa invention is to temporarily spool data as intermediate code before it is sent to the print driver (col. 7, ln. 37-42). The additional spooling mechanisms can be seen by contrasting Figs. 2 and 3. In one aspect, Nishikawa discloses a previewer 306 and change editor 307 in Fig. 3 that can be used so that “a plurality of jobs can be composed together” (col. 8, ln. 59-63).

As acknowledged in the Office Action, Nishikawa does not disclose a merger analysis to determine the economy of joining print jobs, or rendering the print job at a single imaging device.

Freedman discloses a system for interfacing to a printing facility through a computer network. The system collects parameters regarding user needs, such as cost, photos, pictures, graphics, deadlines, number of documents to be printed, colors, paper type, and typeface. The system compares these user parameters with various printing facilities, considering printing equipment issues such as offset presses, paper cutters, and binding equipment, as well as operating costs, time, process requirements. The system evaluates which printing facility is most compatible with the user parameters (col. 1, ln. 1-31).

The claimed invention recites a system and method that occurs in the context of a single imaging device, while Freedman describes printing facilities. The claimed invention recites an intra-device economy, while Freedman discloses a process for obtaining a print job estimate by comparing costs for different printing facilities. Both the claimed invention and Nishikawa disclose electronic format print jobs in a print device language. Some examples of a print device language include the Postscript, PCL, PJJ, and HP/GL2 formats (specification; page 18, ln. 24

to page 19, ln 4). Freedman's print job is not in an electronic format, and Freedman does not disclose the sending of a print job from a client device terminal 14 to a printing facility terminal 38 in an electronic format.

In particular, the claimed invention does not interface to a printing facility, but rather, to a single imaging device. Further, the claimed invention does not evaluate a printing facility, the printing equipment employed by a printing facility, or any other issues associated with physical act of printing a paper medium document. Rather, the claimed invention recites one narrow type of analysis: whether it is economical to join a plurality of (electronically formatted) print jobs. Freedman's system performs an analysis of printing facilities after the user manually enters job parameters. Freedman's system does not analyze an electronically formatted print job. Freedman's system does not perform an analysis of whether it is economical to join print jobs (electronically formatted or not) into a print job. The claimed invention job *joining* analysis has nothing to do with the analysis of color, paper type, other *printing* analysis criteria, or money savings.

An invention is unpatentable if the differences between it and the prior art would have been obvious at the time of the invention. As stated in MPEP § 2143, the *KSR International Co. v Teleflex Inc.* decision (82 USPQ2d 1385, 1395-1397, 2007) suggests 7 exemplary rationales to support a conclusion of obviousness, which include:

A) Combining prior art elements according to known methods to yield predictable results;

B) Simple substitution of one known element for another to obtain predictable results;

C) Use of known technique to improve similar devices (methods, or products) in the same way;

D) Applying a known technique to a known device (method, or product) ready for improvement to yield predictable results;

E) "Obvious to try" – choosing from a finite number of identified, predictable solutions, with a reasonable expectation of success;

F) Known work in one field of endeavor may prompt variations of it for use in either the same field or a different one based on design incentives or other market forces if the variations are predictable to one of ordinary skill in the art;

G) Some teaching, suggestion, or motivation in prior art would have lead one of ordinary skill to modify the prior art reference or the combine prior art references teachings to arrive at the claimed invention.

The Office Action states that modifications to Nishikawa would have been obvious to one of ordinary skill in the art in light of Freedman. This rejection appears to be most closely grounded in the G) rationale - Some teaching, suggestion, or motivation in prior art would have lead one of ordinary skill to modify the prior art reference or the combine prior art references teachings to arrive at the claimed invention.

With respect to this rationale, MPEP 2143 (G) states that the rejection must articulate the following criteria to resolve the *Graham* factual analysis:

(1) a finding that there was some teaching, suggestion or motivation, either in the references themselves or in the knowledge

generally available to one of ordinary skill in the art, to modify the reference or combine reference teachings;

(2) a finding that there was a reasonable expectation of success; and

(3) whatever additional findings based on the Graham factual inquiries may be necessary, in view of the facts of the case under consideration, to explain a conclusion of obviousness.

With respect to the above-referenced first factual analysis criteria, the Freedman reference has been combined with Nishikawa based upon the assumption that the combination discloses every limitation recited in Applicant's claims 1 and 14. However, neither Nishikawa nor Freedman discloses a process that performs a job joining analysis, to determine if the economy of joining print jobs (in a print job language) exceeds the overhead associated with joining. The Office Action acknowledges that Nishikawa fails to disclose a job joining or job joining overhead analysis. As noted above, Freedman determines the best match between job parameters and printing facilities. In other words, Freedman makes an analysis of printing economies. Freedman does not make an analysis of job joining economies, and Freedman certainly makes no kind of analysis concerns print jobs in a print data language. Therefore, Freedman can make no determination of if it is economical to join a plurality of electronically formatted print jobs into a single print job, prior to rendering the joined print job into a single continuous print job. Even if every element of the Freedman disclosure is combined with Nishikawa, that combination does not explicitly disclose every limitation of claims 1 and 14.

The Office Action states that the motivation to combine references stems from impediments incurred in the routine business practices of the printing industry, and that it would have been obvious to combine Freedman's cost-cutting analysis with Nishikawa's print processing method. However, neither Nishikawa nor the claimed invention recites any limitations associated with the printing industry. Since Nishikawa discloses a print system that converts the print instructions associated with an electronically formatted print job into an intermediate code for processing, the Applicant submits that there little motivation to combine Nishikawa's process with a system for selecting a printing facility. Even if Freedman did suggest that Nishikawa's system to modified to include an algorithm to select the most economic printer, this modification still does not suggest any job joining analysis limitations since neither reference discloses either a means or desire to perform such an analysis.

Neither Nishikawa nor Freedman discuss the measurement of overhead associated with joining print jobs, and the Office Action does not explain the logical steps between selecting a printing facility based upon job parameters, and the claimed invention job joining analysis. Without the suggestion, or means of performing this overhead analysis, the combination of references cannot be said to suggest the joining of a plurality of print jobs based upon an analysis of economy.

A *prima facie* analysis of motivation is especially critical since the rejection is predicated on limitations that are not explicitly disclosed in the prior art references. The claimed invention can only be obvious if an artisan makes substantial modifications to the Nishikawa

reference. However, the Freedman reference does not suggest that there is a potential economy to joining a plurality of electronically formatted print jobs, or that this potential economy can be traded-off against considerations of job joining overhead.

Neither does the obviousness rejection provide evidence that such modifications would have been obvious to one with skill in the art based upon what was well known at the time of the invention. “(A)nalysis [of whether the subject matter of a claim would have been obvious] need not seek out precise teachings directed to the specific subject matter of the challenged claim, for a court can take account of the inferences and creative steps that a person of ordinary skill in the art would employ.” *KSR Int’l Co. v. Teleflex, Inc.*, 127 S. Ct. 1727, 1740-41, 82 USPQ2d 1385, 1396 (2007). However, if the *prima facie* rejection is supported by what was known by a person of ordinary skill in the art then additional evidence should have been provided. Notable, when the source or motivation is not from the prior art references, “the evidence” of motive will likely consist of an explanation or a well-known principle or problem-solving strategy to be applied”. *DyStar*, 464 F.3d at 1366, 80 USPQ2d at 1649. The Office Action does not supply evidence that it was well known at the time of the invention to perform a job joining analysis, or a calculation of job joining overhead.

With respect to the second analysis criteria needed to support the G) obviousness rationale, even if a practitioner were given the Nishikawa and Freedman references as a foundation, no evidence has been provided to show that there is a reasonable expectation of success in

the claimed invention. That is, there can be no reasonable expectation of success if the references, and what was known by artisan at the time of the invention, do not teach all the limitations of the claimed invention.

In summary, the Applicant respectfully submits that a *prima facie* case of obvious has not been supported since the combination of Nishikawa and Freedman does not explicitly disclose every limitation of claims 1 and 14. Neither has a case been supported that Nishikawa can be modified to supply the missing limitations in view of Freedman, or what was well known by a person of skill at the time of the invention.

CLAIMS 3-13 and 16-27

Claims 3-13 depend from claim 1, and claims 16-27 depend from claim 14. These dependent claims include all the above mentioned distinctions, which prevent claims 1 and 14 from being an obvious modification of the cited prior art. Since claims 3-13 and 16-27 include these same distinctions, a *prima facie* case of obviousness has not been supported in the rejection of these claims.

2. *The rejection of claims 2 and 15 under 35 U.S.C. 103(a) as unpatentable with respect to Nishikawa and Freedman in view of Reilly (US 6,052,147).*

CLAIMS 2 AND 15

In Section 7 of the Office Action, claims 2 and 15 have been rejected under 35 U.S.C. 103(a) as unpatentable with respect to Nishikawa and Freedman in view of Reilly (US 6,052,147). The Office

Action acknowledges that Nishikawa and Freedman fail to disclose a print server, but that Reilly discloses such a feature, and that it would have been obvious to combine references, with the motivation being that the combination of a printer and print server reduces costs.

The Reilly reference has been combined with Nishikawa/Freedman predicated upon the assumption that the combination of Nishikawa and Freedman discloses all the limitations of independent claims 1 and 14. However, as noted above in the discussion of claims 1 and 14, the combination of Nishikawa/Freedman fails to disclose an analysis of job joining economies or the calculation of the overhead associated with joining a plurality of jobs. Therefore, even if Reilly is combined with Nishikawa/Freedman, the combination still fails to disclose the above-mentioned limitations. Claim 2, dependent from claim 1, and claim 15, dependent from claim 14, enjoy the same advantages.

The Office Action states it would have been obvious to combine a printer and print server to reduce costs. However, this statement does not explain how a practitioner in the art could have modified the references to yield all the claimed invention limitations. As explained above, even when combined, Reilly, Nishikawa, and Freedman fail to disclose all of the claimed invention limitations. The above-quoted statement from Office Action does not explain how even a person with skill in the art could have modified Nishikawa's conventional job joining process to enable a process that optionally joins jobs on the basis of a job joining overhead analysis, since neither Reilly nor Freedman describe or suggest these limitations. Alternately stated, the motivation to supply all

the limitations missing in the references is not suggested by a desire to reduce costs. Such an assertion does not explain how a practitioner could have arrived at the Applicant's claim limitations to achieve the goal of reducing costs. Rather, there must be an explicit teaching in the Reilly reference that shows a practitioner how Nishikawa/Freedman can be modified to yield the claimed invention. Such a *prima facie* case has not been made.

SUMMARY AND CONCLUSION

It is submitted that for the reasons pointed out above, the claims in the present application clearly and patentably distinguish over the cited references. Accordingly, the Examiner should be reversed and ordered to pass the case to issue.

Respectfully submitted,

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/Gerald Maliszewski/
Gerald Maliszewski
Registration No. 38,054

Customer Number 55,286
P.O. Box 270829
San Diego, CA 92198-2829
Telephone: (858) 451-9950
Facsimile: (858) 451-9869
gerry@ipatentit.net

CLAIMS APPENDIX

IN THE CLAIMS:

1. (previously presented) A method for merging print jobs being sent to a single imaging device, the method comprising:

- at a client device, despooling a plurality of print jobs being sent to a single imaging device, where a print job is an electronically formatted document in a print data language;
- performing a merger performance analysis;
- determining that the economy of joining the plurality of print jobs exceeds the job joining overhead;
- in response to determining that the plurality of print jobs can be economically joined, joining the plurality of print jobs into a single joined print job for rendering at the single imaging device; and,
- rendering the joined print job as a single continuous print job.

2. (previously presented) The method of claim 1 further comprising:

- receiving the plurality of print jobs at the single imaging device; and,
- wherein joining the plurality of print jobs into a single joined print job includes joining the plurality of print jobs at the imaging device.

3. (previously presented) The method of claim 1 wherein joining the plurality of print jobs into a single joined print job includes joining the plurality of print jobs at the client device; and,

- the method further comprising:

sending the joined print job to the single imaging device.

4. (original) The method of claim 1 wherein joining the plurality of print jobs into a single joined print job includes:

concatenating the plurality of print jobs; and,
creating a single spool file with multiple raster image processes (RIPs).

5. (original) The method of claim 1 wherein joining the plurality of print jobs into a single joined print job includes:

generating a RIP for each print job, with RIP end/start instructions;

removing the RIP end/start instructions;
concatenating the plurality of RIPs; and,
creating a single spool file with a single RIP.

6. (original) The method of claim 5 wherein generating a RIP for each print job, with RIP end/start instructions, includes generating instructions selected from the group including universal exit language (UEL), printer reset, @ PjL header sequence, and @ PjL EOJ.

7. (original) The method of claim 1 wherein joining the plurality of print jobs into a single joined print job includes:

converting each print job into an image format file; and,
merging the image format files into a single RIP.

8. (original) The method of claim 7 wherein converting each print job into an image format file includes converting each print job into an image format file selected from the group including TIFF, JPEG, Windows bitmap, and PDF format files.

9. (original) The method of claim 1 further comprising:

prior to joining the plurality of print jobs, accepts static control selection commands; and,

wherein joining the plurality of print jobs into a single joined print job includes joining the jobs in response to the selected static controls.

10. (original) The method of claim 9 wherein accepting static control selection commands includes selecting a control from the group including print job format, print job document type, threshold printing instructions, and printing delay instructions.

11. (original) The method of claim 1 further comprising:

accepting dynamic control selection commands;

analyzing dynamic conditions at run-time; and,

wherein joining the plurality of print jobs into a single joined print job includes joining the jobs in response to the dynamic conditions and the selected dynamic controls.

12. (original) The method of claim 11 wherein accepting dynamic control selection commands includes selecting controls from the group including the number of pending print jobs, a merger performance analysis, inter-RIP conflicts analysis, and post-merger inter-RIP conflict resolution.

13. (original) The method of claim 1 wherein joining the plurality of print jobs into a single joined print job includes:

converting each print job into a raster format file specific to an imaging device's rendering engine; and,

merging the raster format files into a single RIP.

14. (previously presented) A system for merging print jobs being sent to a single imaging device, the system comprising:

a merger unit having an interface to receive a plurality of despoiled print jobs, where a print job is an electronically formatted document in a print data language, the merger unit performing a merger performance analysis to determine if the economy of joining the plurality of print jobs exceeds the job joining overhead, and in response to determining that the plurality of print jobs can be economically joined, joining the plurality of print jobs into a single joined print job supplied at an interface for rendering at a single imaging device; and,

a print controller embedded with the single imaging device having an interface to accept the joined print job and an interface to supply a document rendered as a single continuous print job.

15. (previously presented) The system of claim 14 wherein the merger unit is logically connected with the single imaging device; and,

the system further comprising:

a spooler embedded with the single imaging device having a network-connected interface to receive print jobs and an interface to supply the received print jobs; and,

a de-spooler embedded with the single imaging device having an interface to receive the print jobs from the spooler and an interface to supply despoiled print jobs to the merger unit.

16. (previously presented) The system of claim 14 further comprising:

a client device including:

a spooler with an interface to receive print jobs and an interface to supply the received print jobs;

a de-spooler having an interface to receive the print jobs from the spooler and an interface to supply despoiled print jobs to the merger unit;

wherein the merger unit is logically connected with the client device, the merger unit having a network-connected interface to supply the joined print job to the imaging device print controller; and,

wherein the print controller embedded with the single imaging device has a network-connected interface to receive the joined print job from the client device merger unit.

17. (original) The system of claim 14 wherein the merger unit joins the plurality of print jobs into a single joined print job by concatenating the plurality of print jobs, and creating a single spool file with multiple raster image processes (RIPs).

18. (original) The system of claim 14 wherein the merger unit joins the plurality of print jobs into a single joined print job by: generating a RIP for each print job, with RIP end/start instructions; removing the RIP end/start instructions; concatenating the plurality of RIPs; and, creating a single spool file with a single RIP.

19. (original) The system of claim 18 wherein the merger unit generates RIP end/start instructions selected from the group including universal exit language (UEL), printer reset, @ PJL header sequence, and @ PJL EOJ.

20. (original) The system of claim 14 wherein the merger unit joins the plurality of print jobs into a single joined print job by converting each print job into an image format file, and merging the image format files into a single RIP.

21. (original) The system of claim 20 wherein the merger unit converts each print job into an image format file selected from the group including TIFF, JPEG, Windows bitmap, and PDF format files.

22. (original) The system of claim 14 wherein the merger unit has a static condition user interface (UI) for selecting static

controls prior to joining the plurality of print jobs, the merger unit joining the plurality of print jobs into a single joined print job in response to the selected static controls.

23. (original) The system of claim 22 wherein the merger unit is responsive to static controls selected from the group including print job format, print job document type, threshold printing instructions, and printing delay instructions.

24. (original) The system of claim 14 wherein the merger unit has a dynamic condition UI for selecting dynamic controls, the merger unit analyzing dynamic conditions at run-time and joining the plurality of print jobs into a single joined print job in response to the dynamic conditions and the selected dynamic controls.

25. (original) The system of claim 24 wherein the merger unit accepts dynamic controls selected from the group including the number of pending print jobs, a merger performance analysis, inter-RIP conflicts analysis, and post-merger inter-RIP conflict resolution.

26. (previously presented) The system of claim 14 further comprising:

a rendering engine embedded in the single imaging device having an interface to accept the rendered document from the print controller and an interface to supply documents in a format selected from the group including paper media, archive documents, and scanned image data.

27. (original) The system of claim 26 wherein the merger unit joins the plurality of print jobs into a single joined print job by converting each print job into a raster format file which is specific to the imaging device's rendering engine, and merging the raster format files into a single RIP.

EVIDENCE APPENDIX

NONE

RELATED PROCEEDINGS APPENDIX

NONE